GUJARAT TECHNOLOGICAL UNIVERSITY BE - SEMESTER-IV(New) EXAMINATION – SUMMER 2016

Subject Code:2143902			Date:01/06/2016	
Subject	Nan	ne:Physics of Nanomaterials		
Time:10	Total Marks: 70			
Instruction	ns:			
1.	Atte	empt all questions.		
2.	Mal	ke suitable assumptions wherever necessary.		
3.	Figu	ures to the right indicate full marks.		
			MARKS	
0.1			14	
Q.1	1	Short Questions What is low dimension system? Define it	14	
	1	What is low dimension system? Define it.		
	2	Define anergy hand con		
	3 1	Cive the example of wide hand semiconductor any two		
	4	Define wide band gen semiconductor).	
	5	Define affective mass of electron		
	07	What is home junction?		
	/ Q	Define magic numbers		
	0	Define interview of the subscription		
	9 10	Define betero junction		
	11	Define lattice mismatch		
	12	Define quantum wire		
	12	What is quantum dot?		
	13	Define chiral vector		
02	17 (9)	What is 0D nano material? Explain it with examples	03	
Q.2	(a) (h)	Write a short note on 2D and 3D nonmaterial	with 04	
	(0)	examples	With 04	
	(c)	Explain quantum confinement in nano materials.	07	
	(•)	OR	0.1	
	(c)	Write a short note on overview of quantum mechanic	cs in 07	
	(-)	nano materials.		
0.3	(a)	Explain Type 1 hetero junction.	03	
· ·	(b)	Explain type of energy band gaps in solids	04	
	(c)	Write a short note on type 2 hetero junction.	07	
		OR		
Q.3	(a)	Describe spherical cluster approximations.	03	
	(b)	Explain surface area to volume ratio in quantum con	nfine 04	
		system		
	(c)	Explain coupling between quantum well.	07	
Q.4	(a)	Describe super lattice.	03	
	(b)	Explain electronic wave in super lattice.	04	
	(c)	Explain unit cell for quantum well.	07	
<u> </u>			0.2	
Q.4	(a)	Explain exciton in bulk materials.	03	
	(D)	Explain magic number.	04	
	(C)	write a notes on semiconducting nano particles.	07	
Q.5	(a)	Explain electronic structure of metal nano cluster.	03	

	(b)	Write a note on rare gas and molecular cluster.	04
	(c)	Describe bulk to nano transition.	07
		OR	
Q.5	(a)	Describe nano crystals.	03
	(b)	Explain solid disordered nano structured.	04
	(c)	Write a short note on carbon nano tubes.	07
